

What is claimed is:

1. A process chamber for use in fabricating semiconductor devices, comprising:
 - a vessel into which a process gas is to be supplied;
 - an upper electrode disposed in an upper part of said vessel and to which power is to be applied;
 - a shield ring extending along an outer peripheral side surface of the upper electrode for insulating the upper electrode;
 - a lower electrode disposed under the upper electrode as spaced from the upper electrode and to which power is to be applied to convert the process gas to plasma;
 - an electrostatic chuck disposed on said lower electrode and on which a wafer is to be received; and
 - an insulation ring unit extending along an outer peripheral side surface of the lower electrode for insulating the lower electrode,wherein said shield ring and said insulation ring unit each include a substrate, and a protection layer coating the substrate to prevent the shield ring and the insulation ring unit from being etched by the plasma.
2. The process chamber according to claim 1, wherein said protection layer is a layer of AlN.

3. The process chamber according to claim 1, wherein said protection layer is a layer of TiN.

4. The process chamber according to claim 1, wherein said protection layer is a diamond-like coating (DLC).

5. The process chamber according to claim 1, wherein the protection layer is a layer of Al_2O_3 .